

Amendments to the Specification

On page 1, lines 2-5, please amend the paragraph to read as follows:

The invention relates to a process for producing a three-dimensional object having the steps of forming an object in a container arranged within a process chamber on a carrier which can be displaced in the container by sequential selective solidification of layers of a solidifiable pulverulent material at positions corresponding to the cross-section of the object in the particular layer ~~according to the preamble of patent claim 1 or 38 or 41~~ and a device for producing a three-dimensional object by sequential solidification of layers of a solidifiable powder material having a container for accommodating the object to be produced, and a carrier which can be displaced in the container ~~according to the preamble of patent claim 23 or a device according to the preamble of patent claim 36.~~

On page 1, lines 14- 25, please amend the paragraph to read as follows:

A process and a device ~~according to patent claim 1 or 15~~ is known from United States 5 846 370. There it is proposed to construct the object in a container which is provided within a process chamber and after completing the object may be removed from the latter and may be used as a cooling device. It is known from European 0 632 761 to also solidify a container wall surrounding the object together with the object and to place this container thus formed together with the object at a separate location for cooling after the building process. It is known from European 0 289 116 to produce an object by means of laser sintering of a powder, wherein the powder layers are applied by means of a fluidised bed process. Heated or cooled gas is supplied in order to keep the object at a uniform temperature during the building process. It is known from European 0 287 657 to pass a stream of temperature-controlled air through the powder bed, in order to remove heat from the object during the building

process.

On page 2, lines 14-16, please amend and replace the paragraph as follows:

~~The object is achieved by a process according to patent claim 1 or 38 or 41 and a device according to patent claim 23 or 36. Further developments of the invention are given in the sub-claims.~~ The present invention provides a process for producing a three-dimensional object having the steps forming the object (3) in a container (1, 200) arranged within a process chamber (100) on a carrier (4) which can be displaced in the container by sequential selective solidification of layers of a solidifiable pulverulent material (11) at positions corresponding to the cross-section of the object in the particular layer, characterised by the step of controlled removal of non-solidified pulverulent material (11) after completing the object (3).

It also provides a process for producing a three-dimensional object having the steps forming the object (3) in a container (1, 200; 300) arranged within a process chamber (100) on a carrier (4) which can be displaced in the container by sequential selective solidification of layers of a solidifiable pulverulent material (11) at positions corresponding to the cross-section of the object in the particular layer, characterised by the step of controlled cooling of the object (3) after completing.

It further provides a process for producing a three-dimensional object having the steps: forming the object (3) by sequential selective solidification of layers of a solidifiable pulverulent material (11) at positions corresponding to the cross-section of the object in the particular layer, characterised in that the object formed is automatically subjected to infiltration.

The invention also provides a device for producing a three-dimensional object by sequential solidification of layers of a solidifiable powder material having a container

(1; 200) for accommodating the object (3) to be produced, a carrier (4) which can be displaced in the container, and a device (50; 500) for controlled removal of non-solidified pulverulent material (11) after completing the object (3).

Further, it provides a device for automatic unpacking and/or cooling of a three-dimensional object, which is produced by sequential solidification of layers of a solidifiable powder material, having a container (1; 200) for accommodating the object (3) to be produced, a carrier (4) which can be displaced in the container and having a device (50; 500) for controlled removal of non-solidified pulverulent material (11) after completing the object (3) and/or having a device for controlled cooling of the object formed (500; 600).

In the Abstract of Disclosure

Please amend the Abstract to read as follows:

ABSTRACT OF THE DISCLOSURE

A process is provided for producing a three-dimensional object having the steps
forming the object (3) in a container (1, 200) arranged within a process chamber (100) on a
carrier (4) which can be displaced in the container by sequential selective solidification of
layers of a pulverulent material (11) which can be solidified by the action of electromagnetic or
particle radiation at positions corresponding to the cross-section of the object in the particular
layer, characterised by the step of controlled removal of non-solidified pulverulent material (11)
after completing the object (3).

(~~Figure 3~~)

Listing of Claims:

Claims 1-43 (Cancelled).

44. (Previously presented) A process for producing a three-dimensional object, the process comprising the steps of:
providing a container arranged within a process chamber and a carrier that can be moved in the container;
forming the object on the carrier in the container by sequential selective solidification of layers of a solidifiable powder material at positions corresponding to the cross-section of the object in the particular layer; and
controllably removing non-solidified powder material after forming the object.

45. (Previously presented) The process according to claim 44, further comprising, after forming the object, raising the carrier successively within the container and removing the non-solidified powder material present in the region of the container rim.

46. (Previously presented) The process according to claim 44, wherein removing the non-solidified powder material is performed mechanically.

47. (Previously presented) The process according to claim 46, wherein removing the non-solidified powder material is performed by brushes.

48. (Previously presented) The process according to claim 44, wherein removing the non-solidified powder material is performed by a fluid.

49. (Previously presented) The process according to claim 48, wherein removing the non-solidified powder material is performed by a gas stream.

50. (Previously presented) The process according to claim 49, further comprising directing the gas stream essentially tangentially to the surface of the powder material.

51. (Previously presented) The process according to claim 49, further comprising controlling the direction of the gas stream.

52. (Previously presented) The process according to claim 51, further comprising directing the gas stream essentially tangentially to the surface of the powder material.

53. (Previously presented) The process according to claim 49, further comprising blowing away the non-solidified powder.

54. (Previously presented) The process according to claim 49, further comprising removing the non-solidified powder by suction.

55. (Previously presented) The process according to claim 46, further comprising removing the non-solidified powder by suction.

56. (Previously presented) The process according to claim 44, further comprising raising the carrier continuously after forming the object.

57. (Previously presented) The process according to claim 44, further comprising raising the carrier stepwise after forming the object.

58. (Previously presented) The process according to claim 44, further comprising cooling the object is cooled during removing of the non-solidified powder.

59. (Previously presented) The process according to claim 58, further

comprising directing a gas stream essentially tangentially to the powder surface to cool the object.

60. (Previously presented) The process according to claim 44, further comprising removing the container from the process chamber after forming the object.

61. (Previously presented) The process according to claim 44, further comprising tilting the container at a predetermined angle to the vertical after forming the object.

62. (Previously presented) The process according to claim 61, further comprising removing the non-solidified powder and the object by raising the carrier in the container and successive overflowing of an edge of the container.

63. (Previously presented) The process according to claim 62, further comprising providing a sieve device and separating the non-solidified powder and the object from one another in the sieve device.

64. (Previously presented) The process according to claim 44, further comprising collecting the non-solidified powder and transporting away the non-solidified powder.

65. (Previously presented) The process according to claim 44, further comprising treating the surface of the object during removal of the non-solidified powder material.

66. (Previously presented) The process according to claim 48, further comprising controlling the temperature of the fluid.

67. (Previously presented) The process according to claim 66, further

comprising controlling the temperature of the fluid and the ambient temperature of the container.

68. (Previously presented) The process according to claim 48, further comprising controlling the ambient temperature of the container.

69. (Previously presented) The process according to claim 44, further comprising providing a source of electromagnetic radiation and solidifying the powder material under action of electromagnetic radiation.

70. (Previously presented) A device for producing a three-dimensional object by sequential solidification of layers of a solidifiable powder material, the device comprising:

- a container for accommodating the object to be produced;
- a carrier that can be moved in the container; and
- an apparatus for controlled removal of non-solidified powder material after producing the object.

71. (Previously presented) The device according to claim 70, further comprising a cooling apparatus for controlled cooling of the object during the controlled removal of non-solidified powder.

72. (Previously presented) The device according to claim 70, wherein the container has an upper rim and wherein the apparatus for controlled removal of non-solidified powder material comprises a conduit for supplying a stream of fluid essentially tangentially to the upper rim of the container.

73. (Previously presented) The device according to claim 72, further comprising a source for providing suction for removing non-solidified powder material.

74. (Previously presented) The device according to claim 70, further comprising a means for continuous or stepwise raising of the carrier in the container.

75. (Previously presented) The device according to claim 70, wherein the container has an upper rim and the device further comprises an overflow region curved outwards in a region on the upper rim.

76. (Previously presented) The device according to claim 75, further comprising means for tilting the container by a predetermined angle (A) to a vertical in the direction of the overflow device.

77. (Previously presented) The device according to claim 76, further comprising a means for separating the non-solidified powder material from the object.

78. (Previously presented) The device according to claim 70, further comprising means for mechanical removal of the non-solidified powder material.

79. (Previously presented) The device according to claim 70, further comprising a chamber surrounding the container and a controller for control of the temperature surrounding the container.

80. (Previously presented) The device according to claim 70, wherein the apparatus for controlled removal of non-solidified powder material comprises a conduit for supplying a stream of fluid to remove the non-solidified powder material and the device further comprises a controller for control of the temperature of the fluid.

81. (Previously presented) The device according to claim 70, further comprising a conduit for supplying a stream of a gas stream to remove the non-solidified powder material.

82. (Previously presented) The device according to claim 70, further comprising a means for automatic infiltration of the object with a material.

83. (Previously presented) The device according to claim 82, wherein the material is wax.

84. (Previously presented) The device according to claim 82, wherein the material epoxy resin.

85. (Previously presented) A device for automatic unpacking and/or cooling of a three-dimensional object that is produced by sequential solidification of layers of a solidifiable powder material, the device comprising:

a container for accommodating the object to be produced;
a carrier that can be moved in the container; and
an apparatus for controlled removal of non-solidified powder material after producing the object.

86. (Previously presented) The device according to claim 85, further comprising a cooling apparatus for controlled cooling of the object during the controlled removal of non-solidified powder.

87. (Previously presented) The device according to claim 85 in combination a second device for producing a three-dimensional object, the device being located and arranged inside the second device.

88. (Previously presented) The device according to claim 87, wherein the second device is a laser sintering device.

89. (Previously presented) A device for automatic unpacking and/or cooling of a three-dimensional object that is produced by sequential solidification of layers of a solidifiable powder material, the device comprising:

a container for accommodating the object to be produced;
a carrier that can be moved in the container; and
a cooling apparatus for controlled cooling of the object during the controlled removal of non-solidified powder.

90. (Previously presented) A process for producing a three-dimensional object, the process comprising the steps of:

providing a container arranged within a process chamber and a carrier that can be moved in the container;

forming the object on the carrier in the container by sequential selective solidification of layers of a solidifiable pulverulent material at positions corresponding to the cross-section of the object in the particular layer; and

controllably cooling of the object after forming it.

91. (Previously presented) The process according to claim 90, wherein the cooling is effected by providing a gas to the object.

92. (Previously presented) The process according to claim 91, wherein providing the gas comprises blowing the gas into the non-solidified powder.

93. (Previously presented) The process according to claim 91, wherein providing the gas comprises blowing the gas over an exposed surface of the object in the powder.

94. (Previously presented) The process according to claim 90, further comprising providing additional treatment to the object during cooling.

95. (Previously presented) The process for producing a three-dimensional object, the process comprising the steps of:

forming the object by sequential selective solidification of layers of a solidifiable pulverulent material at positions corresponding to the cross-section of the object in

the particular layer; and

subjecting the object to infiltration with a material.

96. (Previously presented) The process according to claim 95, wherein the material is a wax.

97. (Previously presented) The process according to claim 95, wherein the material is epoxy resin.

98. (Previously presented) The process according to claim 95, further comprising controlling the temperature of the infiltration of the object.

99. (Previously presented) The device according to claim 70, further comprising process chamber in which the container and carrier are disposed and in which the object is formed, and wherein the apparatus for controlled removal of non-solidified powder material is disposed outside the process chamber.